

**AMENDMENTS TO THE CLAIMS:**

1-26 Cancelled

27. (Currently amended) A computer readable medium bearing instructions for performing location finding of a mobile station in a cellular system that includes a smart antenna system of plural sector antennas along with a cell-site signal coverage ~~profile~~ map, said instructions being arranged to cause one or more processors upon execution thereof to perform the steps of:

recording signal strengths received at one or more of the plural sector antennas from the mobile station;

calculating the rates of signal changes from the recorded signal strengths;

assessing the movement of the mobile station based on the calculated rates;

predicting the mobile station's movement based on the received signal strengths, and

determining the location of the mobile station by comparing the received signal strength from at least one sector antenna against the cell-site signal coverage ~~profile~~ map along with its predicted movement.

28-29 (Cancelled)

30. (New) A method for performing a hand-off of a mobile station in a cellular system comprising base stations at cell sites, wherein one of the base stations comprises a smart antenna system having plural sector antennas, the method comprising:

receiving spread-spectrum signals from the mobile station via one or more of the sector antennas of the smart antenna system of the one base station;

processing signal strengths of the received spread-spectrum signals to calculate a rate of change for each signal received via a sector antenna of the smart antenna system of the one base station;

assessing movement of the mobile station based on the calculated rates of change;

upon determining that signal strength received at one sector antenna from the mobile station reaches a threshold, selecting a type of hand-off from among:

1) a hand-off between two different serving sectors or sector antennas of the smart antenna system, and

2) a hand-off from the one base station to a base station of an adjacent cell site,

wherein the selecting of a type of handoff is based on the assessment of the movement of the mobile station based on the calculated rates of change; and

handing the mobile station off in accord with the selected type of hand-off.

31. (New) The method according to claim 30, wherein the assessing of the movement includes determining if the rate of change is indicative of a tangential motion of the mobile station across an antenna sector or is indicative of a radial motion of the mobile station within an antenna sector.

32. (New) The method according to claim 31, further comprising:

determining when strength of the signal received at the one antenna from the mobile station reach reaches a first threshold, wherein the selecting of the type of handoff is responsive to the signal received at the one antenna from the mobile station reaching the first threshold; and

determining when the strength of the signal received at the one antenna from the mobile station reaches a second threshold, wherein the handing off is performed in response to the signal received at the one antenna from the mobile station reaching the second threshold.

33. (New) A mobile wireless communication system for providing communication service for a mobile station, the system comprising:

linked base stations at cell sites, wherein one of the base stations comprises a smart antenna system, comprising:

a plurality of sector antennas;

a spread-spectrum transmitter, configured to transmit spread-spectrum signals to be radiated from any one of the plurality of sector antennas;

a spread-spectrum receiver configured to process signals received from the mobile station by the plurality of sector antennas, wherein said signals are received at any of the plurality of sector antennas while one or more of the plurality of sector antennas are radiating; and

a controller coupled to control operation of the one base station and configured for:

processing signal strengths of the received spread-spectrum signals to calculate a rate of change for each signal received via a sector antenna of the smart antenna system of the one base station;

assessing the movement of the mobile station based on the calculated rates of change;

upon determining that signal strength received at one sector antenna from the mobile station reaches a threshold, selecting a type of hand-off from among:

1) a hand-off between two different serving sectors or sector antennas of the smart antenna system, and

2) a hand-off from the one base station to a base station of an adjacent cell site,

wherein the selecting of a type of handoff is based on the assessment of the movement of the mobile station based on the calculated rates of change; and

controlling the base station to hand the mobile station off in accord with the selected type of hand-off.

34. (New) The system of claim 33, wherein the controller is further configured to establish a plurality of the serving sectors, wherein each serving sector is associated with a respective one or more of the plurality of sector antennas and any one of the plurality of antennas is associated with only one of the plurality of serving sectors.

35. (New) The system of claim 34, wherein the number of serving sectors is less than or equal to the number of antennas and each of the plurality of sector antennas is associated with a respective one of the plurality of serving sectors.

36. (New) The system of claim 35, wherein:

the transmitter comprises:

a plurality of transmitters equal to the number of sector antennas, each transmitter associated with a respective one of the plurality of sector antennas and each configured to transmit only those spread-spectrum signals to be radiated from the corresponding one sector antenna; and

the receiver comprises:

a plurality of receivers equal to the number of antennas, each receiver associated with a respective one of the plurality of sector antennas and each configured to process only those spread-spectrum signals received by the corresponding one sector antenna.

37. (New) The system of claim 36, wherein:

each of the transmitters is associated with one of the serving sectors; and

each of the receivers is associated with one of the serving sectors.

38. (New) The system of claim 34, wherein the plurality of serving sectors cover a substantially contiguous geographical area.

39. (New) The system of claim 34, wherein each of the serving sectors has at least two adjacent sector antennas associated therewith.